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Design and Build an Inverter-Grade Magnet Wire Tester

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Senior Design Project

Design and Build an
Inverter-Grade Magnet Wire Tester

A final report submitted to

Professor Paul Lin

Electrical and Computer Engineering Technology
Indiana University Purdue University at Fort Wayne

Submitted

April 29, 2002

By

Victor L. Heniser

TABLE OF CONTENTS

INTRODUCTION	1
BACKGROUND INFORMATION	1
OBJECTIVE	2
DESIGN SPECIFICATIONS	2
Design Problem Statement.....	2
Standard Test Requirements.....	2
Design Specifications.....	2
Performance Specifications.....	3
IMPLEMENTATION	3
PLC (Programmable Logic Controller)	3
Analog Input Module.....	4
Discrete Input Module	5
Discrete Output Module.....	5
AC Current Sensors	5
Solid State Relays.....	7
Power Supply.....	8
Timers and LED Indicator Lights.....	8
Prototype Circuit Construction.....	8
Testing the Prototype Circuit	9
Final Circuit Construction.....	10
Final Testing.....	10
PROJECT BUDGET	12
CONCLUSION	13
REFERENCES	14
ONLINE REFERENCES	15
APPENDIX A – CIRCUIT SCHEMATICS	16
APPENDIX B – RSLOGIX PROGRAM	23
APPENDIX C – COMPONENT MANUALS	33
APPENDIX D – DESIGN REPORT	44
APPENDIX E – PROJECT MANAGEMENT AND IMPLEMENTATION REPORT	52
APPENDIX F – TESTING REPORT #1	59
APPENDIX G – TESTING REPORT #2	64

TABLE OF FIGURES

Figure 1: AC Current Transducers Schematic.....	7
Figure 2: Prototype Circuit Block Diagram.....	9
Figure 3: Final Circuit Design Block Diagram.....	10
Figure 4: Voltage Output versus Frequency.....	11

ABSTRACT

Phelps Dodge Magnet Wire Company is required to have a test to quantify the performance of magnet wire products in an inverter motor that is controlled by a variable frequency drive. Phelps Dodge's customers are requiring inverter motor test data that proves the performance of Quantum Shield is equal to or better than other inverter-grade magnet wire products. This report contains the electrical design to control and monitor an inverter motor test that quantifies the electrical performance of magnet wire products in an inverter motor application. The inverter motor test consists of five magnet wire samples that are electrically stressed across two phases of an induction motor that is controlled by a variable frequency drive. When a sample fails, the elapsed time that the sample was energized is recorded to determine the electrical performance of the magnet wire sample.